Claims

We claim:

1. A wireless mobile communications network including a base station and a plurality of mobile nodes, comprising:

a first mobile node configured as a major node to communicate information directly with the base station via a network link; and

a second mobile node configured to communicate the information indirectly with the base station via a local link with the major node and the network link from the major node to the base station to form a locally linked mobile network within the wireless mobile communications network.

2. The wireless mobile communications network of claim 1 wherein each mobile node further comprises:

a header detector, coupled to a receiver and a decoder, configured to detect a header in a frame used to communicate the information;

a message processor, coupled to the header detector and a transmitter, configured to route the frame over the network link and the local link.

3. The wireless mobile communication network of claim 2 wherein the header detector is connected to an output of the decoder and the locally linked mobile network operates asynchronously.

4. The wireless mobile communication network of claim 2 wherein each mobile node further comprises a GPS receiver and the locally linked mobile network operates synchronously.

5. The wireless mobile communication network of claim 2 wherein the major node communicates the frame while in standby mode, and the minor node receives the frame in active mode.

6. The wireless mobile communications network of claim 2 wherein the mobile nodes are cellular telephones. fig 1c, 9a, 9b

7. The wireless mobile communications network of claim 1 wherein each mobile node further comprises:

a display, coupled to the message processor, to display a warning message when the mobile node communicates information with the base station via the network link and with the minor node via the local link.

8. The wireless mobile communications network of claim 1 wherein each frame includes a header.

9. The wireless mobile communications network of claim 8 wherein the header includes a code word, and control information.

10. The wireless mobile communications network of claim 9 wherein the code word is a Walsh code word.

11. The wireless mobile communications network of claim 9 wherein the code word is a forward code word and the control information includes a list of a plurality of major nodes and a list of a plurality of minor nodes.

12. The wireless mobile communications network of claim 9 wherein the code word is a destination code word and the control information identifies the minor node and the major node.

13. The wireless mobile communications network of claim 9 wherein the code word is a routing code word and the control information identifies the major node and the control information indicates an amount of available bandwidth.

14. The wireless mobile communications network of claim 9 wherein the code word is a receive code word.

15. The wireless mobile communications network of claim 2 wherein the message processor of the major node replaces a forward code word in a header of the frame with a receive code word, the forward code word identifying the major node and the receive code word identifying the minor node.

16. The wireless mobile communications network of claim 1 wherein the base station monitors bandwidth of the locally linked mobile network.

17. The wireless mobile communications network of claim 1 wherein a size and shape of the locally linked mobile network is adaptively adjusted by the basestation depending on need, traffic type, link quality, coverage, utilized bandwidth, and mobility.

18. The wireless mobile communications network of claim 1 wherein each mobile node monitors a quality of the network link with the base station.

19. The wireless mobile communication network of claim 4 wherein the GPS receiver estimates position, speed, and bearing of the mobile node.

20. The wireless mobile communication network of claim 4 wherein each mobile node uses channel quality and mobility characteristics to determine suitability for operating as the major node.

21. The wireless mobile communication network of claim 1 wherein the locally linked mobile network includes a plurality of major nodes configured to communicate information with each other and the minor node.

22. The wireless mobile communication network of claim 1 wherein the base station includes a memory to store a configuration list to associate the major node with the minor node.

23. The wireless mobile communication network of claim 22 wherein the minor node is associated with a plurality of major nodes.

24. The wireless mobile communications network of claim 1 wherein communicating of the information is dynamically routed to optimize a quality of service of the wireless mobile communications network and the locally linked network.

25. The wireless mobile communications network of claim 1 wherein the locally linked mobile network operates in multicast mode.

26. The wireless mobile communications network of claim 2 wherein each frame is encrypted using a pseudo random number sequence.

27. The wireless mobile communication network of claim 1 wherein the major node operates in active mode while receiving low bandwidth frames intended for the major node, and high bandwidth frames intended for the minor node.

28. The wireless mobile communications network of claim 1 including a plurality of major nodes and the base station selects a particular one of the plurality of major nodes to communicate with the minor node based on available bandwidth between the major node and the base station.

29. The wireless mobile communications network of claim 1 including a plurality of base stations and a plurality of major and minor and major connecting with each other via network links and local links.

30. The wireless mobile communications network of claim 29 wherein a first major node communicates with a first base station and a first minor node, and a second major node communicates with a second base station and a second minor node to enable the first and second minor nodes to communicate indirectly with each other via the first and second major nodes and the first and second base stations.

31. The wireless mobile communications network of claim 29 wherein minor nodes are dynamically assigned to different major nodes depending on a quality of service of the network link and the local link.

32. The wireless mobile communications network of claim 1 further including an end of transmission signal to indicate an end of communicating the information.

33. A method for communicating information in a wireless mobile communications network including a base station and a plurality of mobile nodes, comprising:

communicating information directly between a first mobile node configured as a major node and the base station via a network link; and

communicating the information indirectly between the base station and a second mobile node configured as a minor node via the network link between the base station and the major node and a local link between the major node and the minor node.

34. The method of claim 33 further comprising:

detecting a header of a frame received in the major node; and

routing the frame to the minor node via a message processor of the major node.

35. In a wireless mobile communications network that includes a base station and a plurality of mobile nodes, each mobile node comprising:

a receiver coupled to an antenna;

a header detector coupled to the receiver to detect a header in a received frame;

a decoder coupled to the header detector to decode the received frame, the detected frame to be transmitted to another mobile node;

a message processor to reformat the frame;

an encoder to encode the reformatted frame; and

a transmitter to transmit the encoded frame to the other mobile node.

36. The mobile node of claim 35 wherein the header detector is connected to an output of the decoder and the plurality of mobile nodes operate asynchronously.

37. The mobile node of claim 35 wherein each mobile node further comprises a GPS receiver and the plurality of nodes operate synchronously.

38. The mobile node of claim 35 wherein the mobile node communicates the frame while in standby mode, and the other mobile node receives the frame in active mode.

39. The mobile node of claim 35 wherein the header is a forward header that identifies the other mobile node.

40. The mobile node of claim 35 further comprising:

a display, coupled to the message processor, to display a warning message when the mobile node is communicate information between the base station and the other mobile node.

41. The mobile node of claim 35 wherein the mobile node monitors a quality of the network with the base station.

42. The mobile node of claim 1 wherein the mobile node is a cellular telephone.

43. The mobile node of claim 1 wherein the mobile node is a palm top computing device.